R·I·T

Title: Leica Microscope

Semiconductor & Microsystems
Fabrication Laboratory **Revision: B** **Rev Date: 08/29/2011**

Approved by:

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Process Engineer Equipment Engineer

1 INSTRUCTIONS

1.1 Location and Use of Microscope Controls

Control	Location	Use
Illumination Control	Front bottom.	
Aperture Diameter	Front bottom.	Adjusts resolution and contrast.
Cross Hairs	Top of left side.	
Microscope/TV View	Top of right side.	Switch between microscope or microscope and TV view.
Polarizer	Top of right side.	Used with the Nomarski Mode.
Bright Field	Top of right side.	Provides uniform illumination. Good for everyday viewing.
Dark Field	Top of right side.	Provides illumination at a glancing angle. Shows feature edges, particles and defects.
Additional Mag.	Left side.	Provides additional magnification.
Field Diaphragm	Right side.	Changes the size of the field of view.
Neutral Density	Top of right side.	Filters to reduce intensity.
Green Filter	Top of right side.	
Nomarski Adjustments	Front near the lenses.	Reveals surface defects and microstructure.

1.2 Using the Normarski Mode

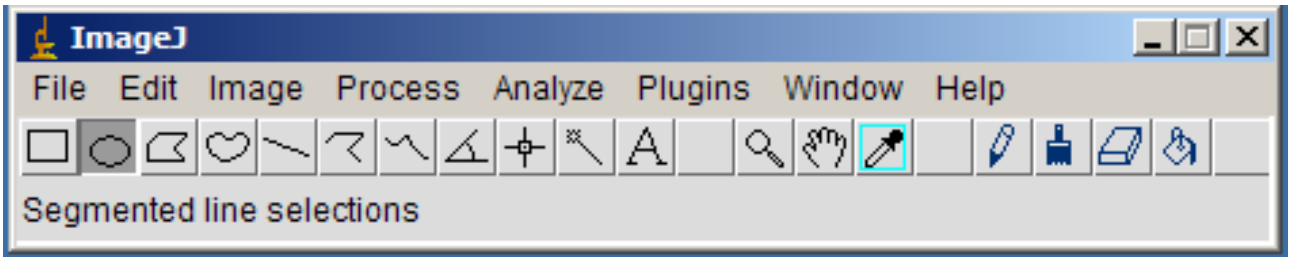
1.2.1 Make sure the polarizer on the top right side is in.
1.2.2 Adjust the intensity.
1.2.3 Use the Nomarski controls to optimize the image. As the knob is turned, the image will change color allowing certain features to be highlighted. This mode is good for revealing surface defects and microstructure.

1.3 Taking Pictures

1.3.1 Log on the computer with your DCE account.
1.3.2 Open the **Osprey Swiftcap** software.
1.3.3 On the upper right hand side of the microscope make sure the slider is set for **TV View** (push in). The picture should appear on the screen.
1.3.4 The **Illumination** should be reduced to give a good picture on the screen.
1.3.5 To capture a picture select **CTRL P** on the keyboard. Give the file a name, type and location.

1.4 Using the Measurement Software

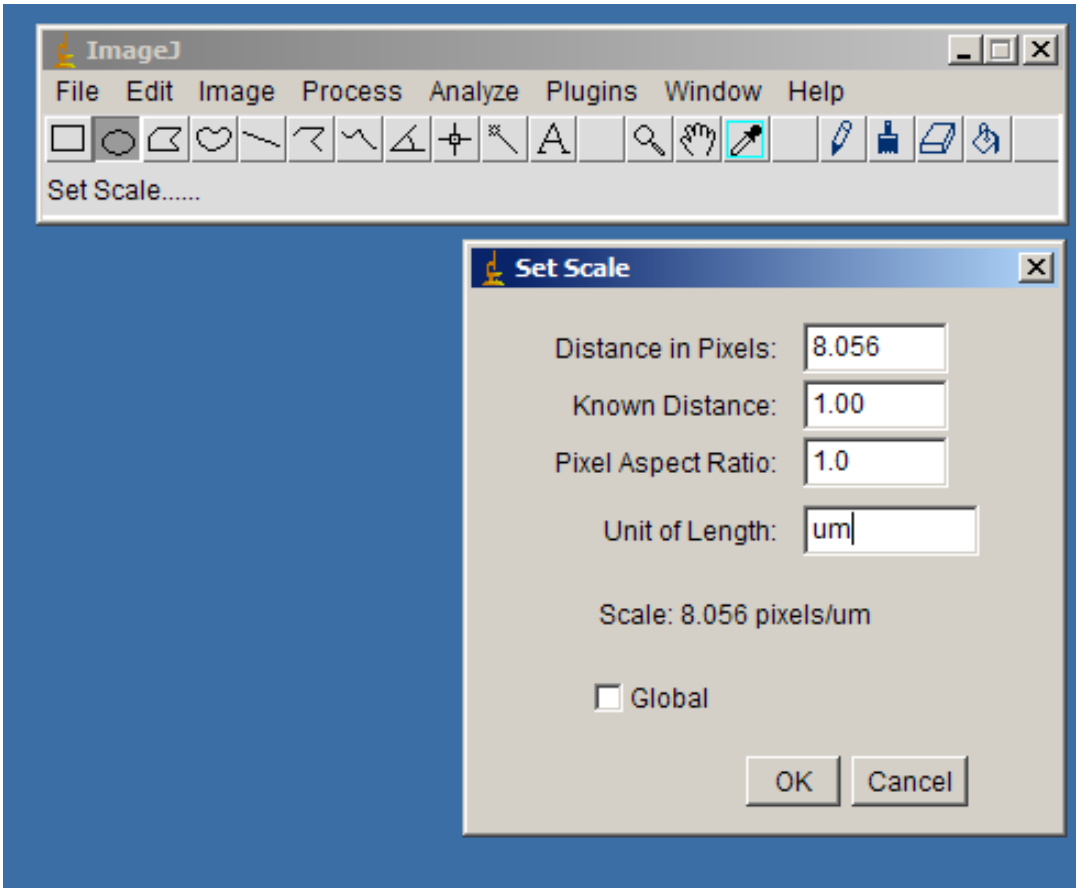
1.4.1 Open the ImageJ software. It is also available free on the internet for use on your own computer.



1.4.2 Under **File** select **Open** and then select a saved picture.

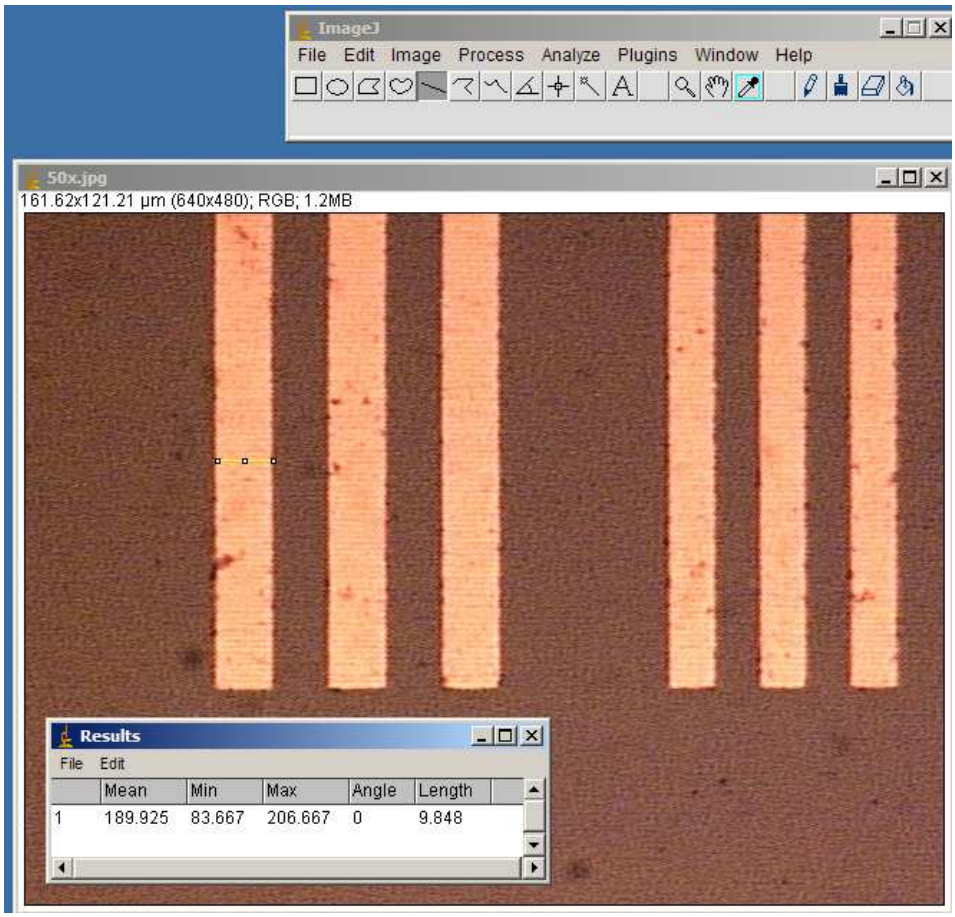
1.4.3 Under **Analyze** select **Set Scale** and enter in the following, depending on the microscope lens. Make sure that the **Additional Magnification** on the upper left side of the microscope is set to 1.0x.

Microscope Lens	Distance in Pixels	Known Distance	Pixel Aspect Ratio	Unit of Length
2.5x	0.2	1.00	1.0	um
10x	0.8	1.00	1.0	um
20x	1.6	1.00	1.0	um
50x	4.0	1.00	1.0	um
100x	8.0	1.00	1.0	um



1.4.4 On the ImageJ toolbar select the button with the shape or line you want to measure. Use the line to measure line width and the box to measure area.

1.4.5 On your picture use the mouse to draw a line to measure line width or a box to measure area.



1.4.6 Under **Analyze** select **Measure** to display the results.

REVISION RECORD

Summary of Changes	Originator	Rev/Date
Original Issue	Sean O'Brien	A-12/06/2006
Updated pixel distance and made some minor corrections	Sean O'Brien	B- 08/29/2011